

EXHIBIT A



PATENT

Serial No. 10/037,630

Examiner Paul D. Marcantoni, Art Unit 1755
Attorney Docket No. 72425.0105

UNITED STATES PATENT AND TRADEMARK OFFICE

In re United States Patent Application
Of Applicants: J. Blake Scott, et al.

Serial No. 10/037,630 : Examiner: Paul D. Marcantoni

Filing Date: January 3, 2002 : Group Art Unit: 1755
Priority Date: August 10, 2001 :

For: **INCORPORATION OF DRILLING CUTTINGS
INTO STABLE LOAD-BEARING STRUCTURES**

DECLARATION UNDER 37 C.F.R. 132

I, Dallas N. Little, hereby declare and aver as follows:

1. That I have been granted the degrees of Bachelor of Science in Civil Engineering by the United States Air Force Academy in 1970, Master of Science in Civil Engineering by the University of Illinois in 1973, and Doctor of Philosophy in Civil Engineering in 1979 by Texas A&M University.
2. That I was employed by the United States Air Force as a civil engineer from 1970 until 1976, during which time I served as chief of construction management (Craig Air Force Base, Alabama), station engineer (Cold Bay, Alaska), and instructor and assistant professor of civil engineering at the Air Force Academy.
3. That I have been employed by Texas A&M University from 1976 to the present and now hold the following positions at that university and its associated institutes: the E. B. Snead Chair Professor in Transportation Engineering in the Civil Engineering Department of Texas A&M University; senior research fellow at the Texas Transportation Institute (TTI); and associate director of the International Center for Aggregates Research, which is a joint center between Texas A&M University and the University of Texas at Austin.
4. That I have served as a materials engineering and pavement design consultant on

major new construction and rehabilitation projects at the Denver (Colorado) International Airport, Hobby (Houston, Texas) Airport; Bush Intercontinental Airport (Houston, Texas); Schipol International Airport (The Netherlands); and several other major highway and airport design projects and as a consultant for numerous companies and government agencies including Koch Industries; DuPont; Exxon; Shell; Mobil; ALCOA; Burlington Resources; Martin-Marietta; the City and County of Denver; City of Houston (Houston Airport Services); Advanced Asphalt Technologies; U. S. Air Force; the U. S. Department of Justice; the Environmental Protection Agency (EPA); Carter and Burgess; Brown & Root; Halliburton, Klotz and Associates; Turner, Collie and Braden, PBS&J; Lhoist Group (Brussels, Belgium); Carmeuse; Graymont; Clogannine, Ltd. (Ireland); Professional Services Industries (PSI); Texas Attorney General; Michigan Attorney General; Georgia Attorney General; Utah Attorney General; Nebraska Attorney General; the King Ranch; Queensland Cement Limited (Brisbane, Australia); Australian Stabilization Association; VicRoads, Melbourne, Australia; MainRoads, Brisbane, Australia; Road and Traffic Authority, Sydney, Australia; the National Lime Association (Ancade) of Spain and associated geotechnical labs; the Institute of Engineers of Ireland; the Federal University of Ceara (Fortaleza, Brazil); O'Keefe Stabilization and Remediation Contractors of London, England, and many other nationally recognized entities.

5. That I have authored over 230 technical reports, including journal articles, and have given approximately 250 invited lectures on technical subjects
6. That I am a fellow in the American Society of Civil Engineers, have twice been awarded the J.W. Emmons award by the Association of Asphalt Paving Technologists, and have received the Trinity Industries/C. V. Wootan Career Achievement Award for Research Leadership in Materials Engineering in 1999.
7. That I have been informed that in the last Office Action on the above-captioned and titled U. S. Patent Application, the examiner rejected all the claims pending

as obvious over U. S. Patent 6,706,108 on the basis of a rationale that included an assertion by the examiner that "[T]he ... limitation of 'said load bearing structure having sufficient resistance to rutting that any rut formed in such surface by 10,000 applications of a single axle load of 18,000 pounds will have a depth of rutting that is less than 1 inch' would have been expected property since the prior art contains the same exact components and also mixes to form a load bearing [structure]"

8. That in my expert opinion, after reviewing the above-cited Polston patent, there would have been no such reasonable expectation by a person of ordinary skill in civil engineering as is stated in the quotation from the examiner in the last Office Action given above. I have reached this conclusion based on the following considerations, among others:
 - (1) A civil engineer of ordinary skill would realize that achieving the level of resistance to rutting specified by the claims pending in the above-captioned and titled application requires considerably more than simply that "the prior art contains the same components and also mixes to form a load-bearing structure", as the examiner has presumed. In fact, achieving this level of rutting or plastic deformation resistance in the road would be reasonably expected by a civil engineer of ordinary skill only if and when critical material properties related to the rutting resistance of a representative sample of the entire road structure to be built have been determined by laboratory testing and the rutting (or plastic deformation) rate and/or magnitude has been reliably estimated by well-established and empirically derived correlations between pavement properties and observed practice. The properties related to rutting potential include at least:
 - (1.1) the resilient moduli¹ of all the layer(s)² in the road that are above the

¹-For continuous pavement layers bound by a reasonable level of chemical stabilization, such as all those used in the examples in the specification of the above-captioned and numbered application,, and for the

natural earth subgrade and the resilient modulus of the natural subgrade itself,

(1.2) the thickness(es) of the layer(s), and

(1.3) the compressive strengths of the layers as well as that of the natural earth subgrade.

One example of a suitable correlation method for reliably estimating the rutting resistance without actually measuring it is described in the specification of the above-captioned and numbered application. In so far as is known to the declarant, any suitable method for reliably estimating the rutting resistance without actually measuring it requires knowledge of at least the three properties noted as items (1.1) through (1.3) above. However, the Polston reference does not give any experimental data on rutting or plastic deformation resistance directly or method to assess such deformation, and this reference also does not give any experimental data on any of the three properties noted in part (1.1) above. This reference therefore can not give a

native subgrade, the resilient modulus can be determined with sufficient accuracy by an established empirical correlation between resilient modulus and unconfined compressive strength, as is also described in said specification. However, the appropriate correlations must be selected in order to match the material layer type.(The unconfined compressive strength is considerably easier to measure in most laboratories.)

² It should be noted that the resilient modulus or moduli of the material(s) used in construction of the road that are required for the correlation are those that are expected to exist at the time the road built with these materials is to be subjected to traffic. If a layer is prepared by mixing distinct components that are known or expected to undergo pozzolanic and/or other chemical reactions, as is true for both the above-captioned and numbered specification and the road bases taught by the Polston reference, the moduli, or any compressive strengths from which such moduli are to be derived, should be measured after whatever chemical changes the combined materials may undergo and after any changes that may be induced by mechanical operations such as compacting the mixture in the process of constructing the road. If a pozzolanic reaction is expected, the resilient modulus may be suitably measured after allowing a specified period of reaction that can be scientifically and reasonably related to a "design value", with the confident expectation that any further pozzolanic reaction that may occur after the road is constructed will only increase the compressive strength and the resilient modulus of the layer, and any such increase in any of

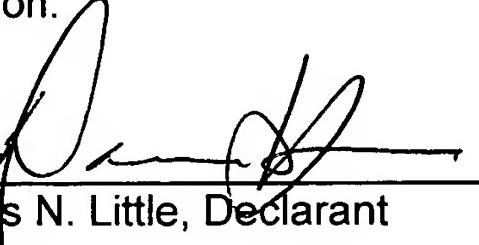
civil engineer of ordinary skill any reasonable expectation that the rutting or plastic deformation resistance required by the pending claims can be achieved by following the teachings of this reference.

(2) A civil engineer of ordinary skill would recognize that the Polston patent teaches the manufacture of "road bases" and of compositions for making road bases by spreading the compositions on a road base site and that the practical use of a road base is to support an overlying material, usually called "surfaced layer", that constitutes the final outer surface of a road ready to be used. The road base, together with the overlying surface, and the natural earth subgrade and any other intermediate layers that may be present, also supports traffic loads after the construction of the road is completed and the road begins to be used. After a road base is surfaced, the surface as well as the road base will be the part of the road that is susceptible to being rutted or plastically deformed by traffic loads. Therefore, rutting resistance is not confined to the base layer but affects all layers as they interact as a system.. Additionally, a road base normally consists of an unbound aggregation of particles. The resilient modulus of such an aggregation can not be determined from knowledge of the compressive strength alone but also depends on the interaction of particles, which is strongly influenced by the stress state developed within the aggregate base and the level of confinement produced within the base. The resilient modulus and shear strength of the aggregate base and its level of stress sensitivity are also strongly impacted by such factors as the mixture of particle sizes and the shape and texture of the particles. Therefore, if one decided to use an aggregation of particles as the outer surface of a road, even though such an action would already be a variation from the teachings of Polston, with no suggestion in Polston's

the layers will only increase the rutting (or plastic deformation) resistance of a road incorporating that

teachings to do so, this additional information would be required to give a civil engineer of ordinary skill a reasonable expectation of achieving the rutting resistance claimed. This additional information is also not in the Polston reference.

9. That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issued thereon.



Dallas N. Little, Declarant

Date signed 1/13/06